

VIRGINIA WILDLIFE

May 1992

ONE DOLLAR





"What will happen when the secret corners of the forest are heavy with the scent of many men and the view of the ripe hills is blotted by talking wires? Where will the thicket be? Gone! Where will the eagle be? Gone! And what is it to say goodbye to the swift pony and the hunt? The end of living and the beginning of survival." —Chief Seattle, 1852.

A new Peterson field guide on reptiles and amphibians came in the mail the other day. As I scanned the pages recognizing a few familiar frogs, toads, lizards and others of their kind, I found myself thinking back to the places I made their acquaintances. Mostly, I met them in hidden places no one much pokes around in, like deep in forests or snug under rocks on a shale cliff; submerged in muck or wedged into cracks in rotting logs.

Only the patient, careful and skillful of our race, I've found, share the pleasure of their company. The mud-smeared kid walking home carrying a frog in his pocket is one of these favored few. You see, to become a true lizard lover, a real frog prince, you have to roam the fields and forests when the bugs come out and snakes lurk in the grasses. You have to be fearless, not minding in the least mud or heat or bee stings. You must be willing to smell bad, be scratched by briars and bitten by mosquitos. You can't be afraid of the dark. You must love it all.

You see, these animals must be hunted to be found. Unlike an eye-catching cardinal at a feeder or a raccoon slinking across a yard, animals like the spotted salamander, the ring-necked snake, and the barking tree frog aren't much on our company. They sway on grass stems and in trees. They live quietly under rocks with mosses growing over them or water swirling around them. They tease us with their spring peeps, summer croaks, and splashes in the water. They're not easily discovered.

Neither are these your glamour species. These are the animals we'd

rather, for the most part, look at on television than find slithering about on our kitchen floors. But, find a Peaks of Otter salamander and you have also found a deep, lush forest with a pink lady's slipper hidden behind a fern or a delicate bloodroot pushing up out of the dark earth. Find a timber rattlesnake, and you'll catch a flash of a black-and-white warbler or the lilting song of a flycatcher. Nothing wonderful exists alone. And the best of everything, it seems, is always hard to find.

I was talking to a thoughtful older man the other day about the old growth forests that are causing such an uproar in the Northwest. "I'm concerned," the man said, "about the loss of jobs to the timber industry. I know the spotted owl is important, but what about those people..." His voice trailed off.

It depends on what's important to us, I guess, because we can very easily make cases for both sides. It comes down to how important it is to be able to recognize a toad, to meet a lizard, or gaze at a wildflower in a deep woods. It comes down to what we feel is most important in our lives—and in the lives of others.

Last week, I watched a young man recount his tale of a terrific fire in Oakland, California on television. I remember being struck by the fact that he said he had just a few minutes to gather up his belongings before the fire was to hit his house. He found himself standing inside his beautiful, several hundred thousand dollar house empty-handed. Nothing seemed worth saving, he said, except perhaps the fish in his aquarium.

We are told that the good life consists of many things, and the more the better. It is best to own a house too big for us to clean without help and to drive a BMW convertible. We are told that happiness will assuredly follow if we acquire lots of things and more of them. We forget that there was a time when we were quite happy before we knew any better.

I remember that as a youngster I was not impressed by much. Indeed, a lizard was the greatest gift imaginable. I longed for a horned lizard, but I was not skilled in the art of lizard chasing and could charm no boy to bring me one. Still, once I was given two brightly colored lizards, caught in the tumbleweed country around our house. I incautiously showed off my prize to the boy next door who tried to grab them from the box I was holding. I bit him. Hard. No one seemed to understand my panic.

I should like to believe that there will always be places left for toads to turn into princes. But, it seems we try very hard these days to please everybody. We don't want to cause hardship, pain, or suffering. We want so very much for everyone to be happy. So, we bravely advocate compromise, giving a bit here, a bit there. No one is really very happy by it all, but the least we can say is that we have tried very hard to be fair. The problem is, when you are dealing with ecosystems, with the earth around us all, there isn't much room for compromise anymore. Our cards are running out and it seems to me we have to be very careful about our final deals. There are too many of us and too little of everything else. We can have what we want, but the question is now becoming, for how long?

There is a Navajo legend about two warriors facing Big Lonesome monster, who mistakes shadows for substance. The monster keeps swallowing up a lake trying to swallow up the boys whose images are reflected in it. He mistakes the shadows on the water for something real.

Big Lonesome, I believe, is well-named.



The white-eyed vireo is one of our neotropical migratory songbirds spending their summers in Virginia and their winters in the neotropics. Today, many of these beautiful birds are in serious trouble—see page 11 for details; photo by Maslowski.

VIRGINIA WILDLIFE



Large-flowered trillium abound on G. Richard Thompson Wildlife Management Area—see page 4 for details; photo by Hal Horwitz.

Cover: Indian pipe; photo by Hal Horwitz

Back Cover: Red-eyed vireo; photo by Maslowski

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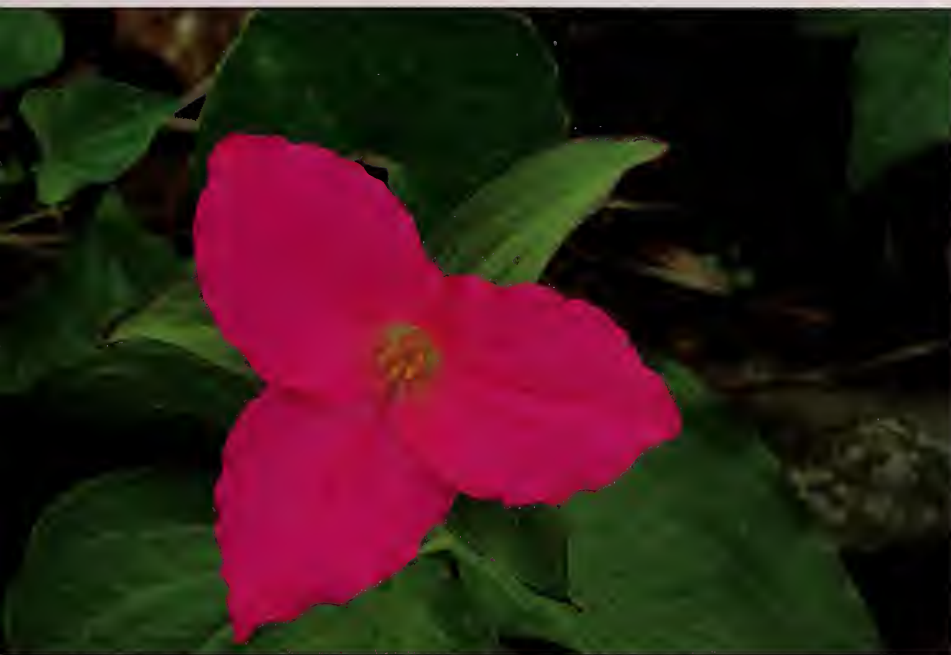
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Dedicated to the Conservation of Virginia's Wildlife and Natural Resources



Trillions of Trillium

Large-flowered Trillium
Trillium grandiflorum



Not only does the Thompson WMA display the typical white large-flowered trillium, but variations in the flower's color from white to cerise are common in the area; photo by Hal Horwitz.

Protected within the G. Richard Thompson Wildlife Management Area is one of the most spectacular populations of trillium on the East Coast.

by Nancy Hugo

On the subject of the wildflowers in the G. Richard Thompson Wildlife Management Area (WMA), plain-spoken scientists become orators, rugged outdoorsmen become poets.

"It's mind-boggling," says Virginia Department of Game and Inland Fisheries (VDGIF) Wildlife Division Chief Bob Duncan of the spring displays of trillium at the Thompson. "People can't believe there are so many of them. It's a concentration the likes of which I've never seen."

"It's one of the best places for flora I can think of on the northern Virginia Blue Ridge," says naturalist Gary Fleming, a contract botanist for the Virginia Division of Natural Her-

itage, who did two years of extensive field work in the area. In his final research summary, Fleming wrote: "If there are currently two square miles of trillium ground cover [in the area], with a density of one individual per three square feet, then there are more than 14,000 individuals per acre and over 18 million trillium in all. This may sound preposterous, but it may actually be a very conservative estimate."

What Duncan and Fleming are describing and what generations of wildflower enthusiasts have gone on pilgrimages to see is one of the eastern United States's most spectacular displays of *Trillium grandiflorum*, a delicate wildflower with three leaves, three sepals, and three white-

to-pink petals that bloom on the floor of rich woods in early spring. Flower parts in threes give this wildflower its name, but in the Thompson WMA it's easy to believe that trillium are called trillium because there are trillions of them. You can walk for hours on the trails that wind through the upper reaches of the Thompson and never be out of sight of trillium spreading as far as the eye can see.

Located on the eastern slope of the Blue Ridge Mountains at the western edge of Fauquier County north of the town of Linden, Virginia, these two square miles of large-flowered trillium are part of a 4,000-acre area owned by VDGIF, of which 533 acres are the subject of an historic agreement between VDGIF and the Virginia Native Plant Society (VNPS) to protect the exceptional native plant communities in the area. This agreement, which pledges both VDGIF and VNPS to work together toward a goal of protecting the area's botanical integrity without interfering with traditional recreational uses such as hunting, elicits as many rave reviews as the trillium themselves.

"It's one of the best examples of constructive cooperation between lay people and professionals I've seen," says Duncan.

"It's a good illustration of how different kinds of interests can work together for mutual benefit," says Fleming.

The trillium treaty was struck in May of 1990 when representatives of VDGIF and VNPS met to discuss how the Thompson WMA might be best managed to protect both wildlife and the area's most valuable native plant populations. Jim Remington, then director of VDGIF, suggested the meeting because VNPS members and others were concerned about logging near sensitive areas of the Thompson where gypsy moth damage had caused high tree mortality. The logging was designed to remove dead trees and make openings for wildlife, but wildflower enthusiasts feared damage to the mountain's high trillium slopes and to its sensitive seepage swamp, a habitat rich in rare species.



Of particular concern to VNPS members were the effects of logging trucks' widening roads, straightening curves, and compacting soils where delicate native wildflowers grew.

"Where the ground is scraped, trillium cannot survive," says Gary Fleming. In fact, he points out, communities of delicate natives like yellow lady's slipper, Canada lily, tall bellflower, and showy orchis—communities in which the Thompson WMA is rich, evolve gradually over a long period of time. When their habitats are disturbed, the plants that replace them are usually opportunistic aliens like honeysuckle, burdock, mullein, and garlic mustard, species with which the delicate natives can't compete.

The meeting between VDGIF and VNPS representatives took place at the G. Richard Thompson WMA on a

rainy day when the trillium were at their peak. The rain forced participants into a nearby cabin, but it did nothing to cloud the beauty of the trillium, yellow lady's slippers, and showy orchis blooming that day, and it may have contributed to the friendship forged between VDGIF and VNPS representatives.

"There was almost instant rapport between their folks and our folks," recalls Duncan. "We both have a deep and abiding appreciation for these unique things. For me, it was a great refresher, getting to learn and relearn some of these plants. These people are natural teachers. They're some of the best folks we've ever worked with."

Remington suggested drawing up a written agreement between the two groups to spell out their willingness to cooperate in managing the Thompson WMA. That "memoran-

dum of agreement" pledges representatives of VDGIF and VNPS to work together to develop mutually acceptable techniques to ensure the long-term protection of the significant wildflower populations and natural communities in a 533-acre portion of the Thompson. Under terms of this agreement, these most sensitive areas would neither be logged nor subjected to heavy machinery for two years. In the meantime, the two groups, with the help of appropriate experts, would jointly study the designated area and come up with best management practices for its permanent protection. Traditional uses of the area, such as hunting, would continue.

"The decision was easy," says Duncan of the agreement, "because it was the right thing to do. I hope that the agreement is one of many more to come as we identify other unique



areas on state-owned land. But, credit is due the folks there in the Native Plant Society who worked so diligently to bring this to our attention. And, they seem to be appreciative of our effort. They acknowledge the fact that the wildflowers are there because of our management up to this point. I think it's a case of citizen involvement at its best."

To carry a good thing even further, VDGIF decided to list part of the G. Richard Thompson WMA as an outstanding native plant site under the VNPS Site Registry Program—the first property to be so designated in the state.

The VNPS Site Registry Program is a voluntary program in which owners of property (public or private) on which native plants of regional or state significance grow agree to have that site listed as a registry site. Although site registration



The G. Richard Thompson Area is a paradise for wildflower enthusiasts throughout the spring and summer, and is easily accessible to visitors.

Opposite page: Large-flowered trillium (far left) and showy orchids (left); photos by Hal Horwitz.

This page: Large-flowered trillium display at Thompson WMA (left); photo by Rob Simpson. Nodding trillium (below); photo by Hal Horwitz.



does not legally bind the landowner in any way, the landowner does agree that the site is of special value and should be protected. VNPS provides advice about how to best manage the site to protect the resource.

The purpose of the program is to create awareness of important native plant sites and to encourage their voluntary protection. (For more information about VNPS Site Registry Program, write Virginia Native Plant

Society, P. O. Box 844, Annandale, Virginia 22003.)

"The agreement between VDGIF and VNPS to jointly protect the Thompson is a good illustration of how different kinds of interests can work together for mutual benefit," says Gary Fleming. "There's no conflict in my mind between VNPS and VDGIF goals. Game management has accomplished a certain kind of protection for the flora in this area."

Fleming points out that hunting, which has controlled deer populations in the Thompson, is one reason the trillium are so abundant there.

"If you banned hunting," says Fleming, "the trillium population would go down in inverse proportion to the deer population, because deer do eat trillium." He cites the example of problems in Shenandoah National Park where no hunting is allowed and native orchid populations have been decimated by deer. "In some parts of the park," he says, "they've stripped the understory of herbaceous plants. Only things unpalatable to deer are left."

In contrast, the Thompson WMA is a wildflower lover's paradise. Although the spring trillium display is the show for which the area is best known, the Thompson's riches aren't limited to trillium. Blooming with it in the spring are carpets of mayapples so big they seem Amazonian. Skunk cabbage, yellow lady's slippers, wood betony, yellow corydalis, unusual green violets, yellow violets, Dutchman's breeches, bloodroot, toothwort, and golden Alexanders are also among the Thompson's spring performers. But the Thompson's performance doesn't end in spring.

"Rich woods tend to have a period when they max out—they might be beautiful in the early spring, then they don't have much going on during the late spring, summer, or fall," says Gary Fleming. "But the Thomp-





son just keeps right on going. You can go in the middle of the summer and find its slopes covered with yellow jewelweed—immense patches of it as big as the trillium's. Horsemint, black snakeroot, and Canada lilies give it the same lush feeling in the summer it had in the spring. Asters and goldenrod extend that feeling into the fall. The soil is capable of sustaining a continued cycle of lushness and diversity over the course of the entire growing season. It's just out and out one of the best rich woods I know about."

Unlike many areas so rich in wildflowers, the Thompson is also both accessible and relatively immune to the damage that might be caused by having too many visitors. A road leads right up the mountain to a parking lot from which a fire trail leads into the woods. Not only can groups travel this fire road with several abreast, they needn't stray off the

tible than the fire trail to too much foot traffic, they are so lovingly maintained and beautifully laid out that the traveler is almost forced to step gently on this rock, move cautiously around that violet, until he develops a sense of intimacy with—and respect for—these woods.

The Thompson is also a treasure trove for scientists. Dr. Richard Lighty, Director of the Mt. Cuba Center for the Study of Piedmont Flora, is one of many botanists who have come to the Thompson for research and left spellbound. A trillium expert, Dr. Lighty says of the Thompson's trillium population: "It's one of the most dense and extensive I've ever walked in, and also one which shows the most variation in flower color."

Although the flowers of *Trillium grandiflorum*, the large flowered trillium, typically open white and fade to pink, at the Thompson, the *Trillium grandiflorum* bloom not only in white but in shades of pink from apple blossom to cerise. Lighty thinks this



The Virginia Department of Game and Inland Fisheries and the Virginia Native Plant Society are working together to preserve the spectacular wildflower treasures on the G. Richard Thompson WMA.

Opposite page: Large-flowered trillium; photo by Hal Horwitz.

This page: Mayapple (top); photo by Rob and Melissa Simpson. Bloodroot (above) and yellow lady's slippers; (right); photos by Hal Horwitz.

road to see the spectacle they've come for; wildflowers pose like specimens in a botanical showcase along the high roadbank. Narrow trails lead off the fire trail (one is a section of the Appalachian Trail), and although these paths are more suscep-



variation in flower color may be the result of an "ancient hybridization event" that took place as long ago as the retreat of the glaciers, but no one knows for sure.

"It's a mystery," he says. "I hope someday somebody works it out."

Other significant plants and plant communities in the Thompson include several populations of nodding trillium, *Trillium cernuum*, and a globally rare bog blue grass, *Poa paludigena*. Although most amateurs would overlook the bog blue grass, an inconspicuous grass that blooms for a short period in June and disappears by July, Gary Fleming, who discovered it in a seepage swamp (a saturated area at the head of Wildcat Hollow), views it as one of the Thompson's greatest treasures.

"It's known at only 55-60 sites worldwide," says Fleming, "and its presence makes that seepage swamp even more significant."

The Thompson WMA is full of natural wonders and nagging mysteries as well. For example, are the trillium, which have spread to dominate the spring ground flora of this relatively young woodland, a transient phenomenon? Will they disappear as the forest ages? If so, should we tamper with natural succession to protect them? Already, some of the volunteers who maintain the trails in the Thompson are wondering whether they should be removing some of the young trees coming up in the forest understory.

Garlic mustard, an invasive alien, may represent another threat to the Thompson's native plant populations. Relatively unknown 15 years ago, this plant is one whose populations have exploded in the past few years. Its spread in the Thompson WMA, exacerbated by soil disturbance and compaction caused by logging trucks, has been noted with alarm by



Wildlife management and wildflower protection are often compatible. Controlling deer herds on the Thompson WMA, for example, has protected the diversity of its flora. Visitors to the area will be struck by the breathtaking variety of wildflowers, all within a step of each other. **Top:** Large-flowered trillium, yellow lady's slipper, and mayapple; photo by Hal Horwitz. **Above:** Jack-in-the-pulpit, photo by Bill Lea.

botanists, but no one is quite sure what to do about it. Volunteers from VNPS and other organizations are willing to try to remove the plants manually, but concern that this will create more soil disturbance, and therefore conditions propitious to the sprouting of more garlic mustard seeds, has made them decide to study the situation further before taking action.

What seems clear as these questions are pondered, however, is that the G. Richard Thompson WMA has never had a better cadre of laymen and professionals committed to its protection. And as housing developments encroach to the very edge of the area itself (trillium were being scraped from front yards to make way for lawns the very day I visited), the value of state ownership of this land becomes ever clearer.

"The citizens of the state are lucky to have property like this in public ownership," says Bob Duncan.

Although he speaks for the Department of Game and Inland Fisheries, he couldn't express the feelings of the Virginia Native Plant Society any better. □

Note: The trillium display at G. Richard Thompson WMA should be in full bloom throughout the entire month of May. To reach the area, take the Linden exit off I-66. From Linden, which is about 10 miles east of Front Royal, take Rte. 638 north until you reach parking lots 6 and 7 near the lookout tower. Walk the trails southeast and enjoy the splendor of the spectacular wildflower display.

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On a Wing and a Prayer



*Virginia joins the
ranks of
Partners In Flight,
an international
conservation effort,
to halt the alarming
decline in our
neotropical
migratory birds.*

by Dana Bradshaw

Have you ever wondered what it sounds like to be in a tropical rain forest? Well then, take a walk in the woods this spring, or hike a mountain trail, or paddle a canoe through a wooded swamp. Almost every bird you hear will have spent over half of its life in tropical forests. Of course, if you go out canoeing or hiking this spring, and don't hear lots of exotic bird songs, don't be surprised. Many of these species are disappearing.

The birds I am referring to are known as *neotropical migrants*. These are species that breed in temperate North America, then migrate south to spend their winters in what is known as the neotropics, or New World tropics: the Caribbean Islands, Mexican lowlands, and Central and South America. Although neotropical migrants include most shorebirds and many hawks, there are nearly 100 additional species falling into this category which inhabit the fields and forests of Virginia. Most of them are songbirds.

You can think of our yearly bird population as composed of four different groups of songbirds. First, there are the permanent residents: the cardinals, chickadees, and Carolina wrens, among others. They are

with us year-round, many of them present as backyard birds. Look for them around your feeder in winter.

Then there are the short-distance migrants. These songbirds are also with us year-round, only the ones we have in the winter are often not the same individuals that were with us in the summer. Robins, bluebirds, and goldfinches are good examples. These Virginia breeders often head down into the Southern states for the winter, while at the same time they are being replaced by their counterparts heading down to Virginia from the Northern states.

Next, there are our winter visitors. These are also migrants of a sort. They include the juncos, purple finches and several of our sparrows just to name a few. Most of these birds breed far to the north of us, but spend their winters in the more temperate climes to the south. Although beautiful singers, we rarely get to hear them except on occasional

warm days in late winter before they head back north.

Finally, there are the neotropical migratory birds. These are the brightly colored creatures that fuel the passions of birdwatchers every spring. They are almost mythical to many because of their boisterous songs yet elusive nature. They are the birds with make-believe names, as though bestowed on them by children: yellow-billed cuckoo, rose-breasted grosbeak, great-crested flycatcher, worm-eating warbler. And these are the birds in the most trouble.

Don't look for these birds around your feeder in winter. Don't even expect to see them around feeders in summer. These birds are primarily insect eaters. Collectively, they glean insects and spiders from the leaves, twigs, and branches of every part of almost every kind of tree or shrub. They probe the ground for snails, worms, and centipedes. And some of the more specialized ones catch al-



most all their food on the wing, from wasps and flies to mosquitoes and moths. Occasionally, they eat fruits and berries, and some may stop in at feeders for a rare appearance. However, the neotropical migrants are primarily forest-dwelling birds, not the typical residents of urban backyards and landscaped shopping centers.

The Problem

Actually, over 75 percent of the forest-dwelling birds breeding in Virginia are neotropical migrants. Unfortunately, over two thirds of these birds have shown steady population declines in Virginia since 1980. This information comes from a U.S. Fish and Wildlife Service survey that has been conducted annually since 1966. Known as the Breeding Bird Survey (BBS), this national effort collects data each summer from thousands of volunteers monitoring almost 2000 25-five mile roadside routes across the United States and Canada. The observers stop at each half mile of their route and record all birds seen or heard at each stop. There are currently 51 BBS routes in place in Virginia, providing data from across 1250 miles of the state.

Title page: Blue-winged warbler feeding a brown-headed cowbird chick. As forest edge nesters, blue-winged warblers are more susceptible to nest parasitism by cowbirds than birds that nest deep in forests; photo by Steve Maslowski.

Opposite: Male rose-breasted grosbeak feeding young. These birds are declining by 4.9% per year in Virginia; photo by Steve Maslowski.

Right: A generalized view of the breeding and wintering distribution of the neotropical migratory birds of eastern North America. Overlapping these distribution ranges are the principal land migration routes. Horizontal line indicates approximate boundary between temperate North America and the neotropics; illustration by Celia N. Dunlevy.



Right: The warbling vireo is declining by 4.1% per year in Virginia. This species occurs most frequently in the upper Piedmont and Blue Ridge, and is declining more rapidly than any other vireo species nesting in Virginia. The warbling vireo favors open, deciduous woods and is the only vireo that occurs across the United States; photo by Rob Simpson.

Opposite page: The scarlet tanager (male pictured) is beginning to show declines in Virginia. This species normally nests in deciduous woodlands throughout the state; photo by Rob Simpson.



Neotropical migratory birds, by the very nature of their existence, are exposed to a host of problems that many other species never have to face. First, they must migrate great distances to reach their wintering grounds. The neotropical migrants of eastern North America funnel down the coast and along major river and mountain corridors to reach the Gulf Coast or south Florida. Some of them follow the Texas coast down to Mexico, and from there they separate out by species, some filtering down to southern Mexico, others continuing on to Central America as well as northern and coastal South America. Those jumping off from south Florida spend their winters among the Caribbean islands or continue down to South America.

As you may know, the neotropics have been the site of the destruction of millions of acres of forest in the last few decades. Cleared primarily for agricultural needs, the loss of these forests is thought by many to explain the decline in many migratory

species. A reduction in forest cover on the wintering grounds forces these species into smaller areas of available habitat for a significant portion of the year. This increases the potential for environmental and population stress. It also increases the value of those remaining forest patches and accentuates the consequences when they, too, are lost. Some of these birds have very specialized habitat requirements in the tropics, so even the loss of a relatively small area could have grave consequences if it involves the specific habitat requirements of a certain species.

Unfortunately, there are other problems as well. The countries to the south of us also continue to use large amounts of fungicides, herbicides, and insecticides. Many of these pesticides are products now banned from use in this country, some of which have already been shown to cause harmful effects in wildlife.

It is not difficult to lay the blame on others for things we feel are out of



Partners In Flight

The Neotropical Migratory Bird Conservation Program is a creation of the National Fish and Wildlife Foundation. It is also referred to as the *Partners in Flight* program, in recognition of the cooperative venture with Canada and our Latin American neighbors. Following are the original goals of the program:

I. Population and Habitat Monitoring

- 1) To obtain reliable information on the population status of neotropical migratory birds to allow assessment of population trends.
- 2) To expand and standardize current surveys in North America to include the inadequately covered species and regions.
- 3) To implement complementary monitoring programs for migrants on wintering grounds in Mexico, the Caribbean Basin, Central and South America.
- 4) To develop cooperative networks for data sharing among organizations and countries.
- 5) To periodically assess the success of conservation programs.

II. Management

- 1) To identify habitats that are essential for declining species and establish joint venture conservation efforts.
- 2) To manage populations and habitats on a sustainable basis to meet human and wildlife requirements.
- 3) To coordinate management

among federal/state/private landholders in North and Latin America.

4) To manage for biological diversity and viable populations of neotropical migratory birds.

III. Research

1) To identify habitats and other resources critical for neotropical migrants on the breeding and wintering grounds.

2) To identify species and habitats of greatest concern.

3) To evaluate ecological, social, and economic impacts of neotropical bird management.

4) To provide management recommendations for sustaining healthy populations of neotropical migrants and their habitats.

IV. Education, Outreach, and Communication

1) To implement public educational programs focusing on neotropical bird migrants and their ecosystems.

2) To focus Latin American efforts on integrated biological, economic, and sociological concerns.

3) To develop international continuing education programs for resource professionals.

4) To establish international forums to coordinate monitoring, management, research, and education programs.

V. International Partnerships

1) To promote biological diversity programs that are compatible with human needs.

2) To integrate conservation with sustainable resource development.

3) To support in-country conservation programs.

4) To promote technology transfer among countries.

5) To promote development of human resources via education, training, and personnel exchanges.

our control. But we would be naive to think that the only problems for these birds occur in the tropics. Actually, the long journey getting back and forth is dangerous, though in a different way.

Small migratory songbirds depend on developing large energy reserves before they begin their migration. But, long-distance flight requires a great deal of energy, so they are forced to land regularly and refuel as their reserves are depleted. As most of these birds are night migrants, morning often finds them stopping to look for a place to dine. Unfortunately, the available eateries seem to be declining also. Coastal migrants depend heavily on naturally vegetated shorelines to ensure a readily available food supply whenever exhaustion forces them to refuel. As more and more of our coastline succumbs to recreational and development pressures, it becomes harder for migrating birds to be assured of access to ample foraging areas during the particularly stressful time of migration. As a result, migrants tend to be forced into fewer refueling areas, which concentrates the number of migrants, and further reduces the amount of available food. Unfortunately, predators tend to concentrate in these remaining habitat patches, also.

Another problem confronting birds in migration is poor weather. You can always tell when the weather gets really foul in the spring and summer. Just go to the coast and look in the bushes. If you see a bunch of little birds, don't plan on taking your boat out that day. Severe weather fronts are what birdwatchers pray for in the spring or fall. That's when you are likely to see almost anything that migrates along the East Coast, and some things that typically don't.

Migratory birds cannot afford to pass up protective cover if a storm is brewing off the coast. They could

lose valuable time being blown off course, or they could even be blown backwards. In severe cases, strong winds can take a deadly toll. In 1982, 265,000 migratory birds were estimated to have been killed from a single storm event off the Texas coast. Carcasses washed up on the beaches for days.

So, migration for these songbirds is the price they have to pay to spend the winter in a tropical paradise. Only, it's starting to work out like some of our vacations: the place wasn't the paradise expected, and getting there was more trouble than it was worth.

At least we can take consolation in the fact that the birds are safe on their breeding grounds in the United States and Canada. Or, can we? Every year we see declines in a number of different migratory species right here in Virginia. But, can we blame all these losses on the events that are taking place to the south of us? The answer is no. There is now a formidable body of information that clearly indicates problems with some of our traditional land uses and



Above: The cerulean warbler (male pictured) is a good example of an area sensitive species, requiring large blocks of mature forest habitat (often more than 1,000 acres) to nest in. Currently this species is declining by 4.6% per year in Virginia; photo by Bill Dyer, courtesy of Cornell Laboratory of Ornithology.

Opposite page: The veery, one of four thrush species nesting in Virginia, is experiencing a 6% per year decline in the state. This bird raises its young in moist mountain forests and is known for its ethereal song; photo by Maslowski.



A Virginia Neotropical

Neotropical migratory birds actually include some species that winter in Virginia, and some that just pass through the state in migration. However, Virginia's neotropical migrants are best represented by those species wintering primarily in the neotropics and breeding in Virginia. These species groups and Virginia's representatives in them are listed below:

Cuckoos

Occur in mature, open hardwood forests and mixed woodlands, orchards. They feed mainly on caterpillars; also other insects, spiders, small reptiles and amphibians, as well as some fruits and berries. Occasionally eat other birds' eggs.

yellow-billed cuckoo

black-billed cuckoo

Nightjars

Occur in open conifer, and mixed woodlands, especially where adjacent to areas of short or open vegetation; also in grassy savannah type areas and on rooftops in urban areas. Feed primarily on large night-flying insects, especially moths. May catch and eat smaller birds in migration. The nightjars nest on the ground.

common nighthawk

whip-poor-will

chuck-will's widow

Hummingbirds

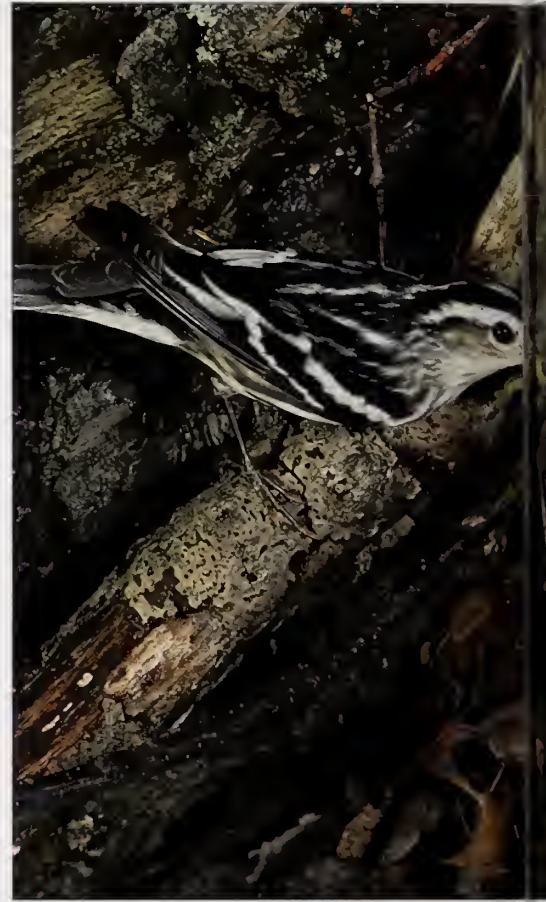
Occur in mixed woodlands, parks, and gardens. They feed on flower nectar, spiders, and small insects. Our only eastern hummingbird is the:

ruby-throated hummingbird

Flycatcher

Utilize all forested habitats; many are found in floodplain forests or along streamsides. Some occur only at high elevations. All feed primarily on insects taken on the wing, but may take fruits and berries as needed. All but one species build cup nests in trees.

Eastern wood-pewee



Clockwise from lower left:

The **northern oriole** (male pictured) is declining by 4.7% per year in Virginia. A bird of suburbs and wooded parks, it will often take fruit from feeding stations; photo by Rob Simpson.

The **solitary vireo** is actually increasing in Virginia by 12% per year. This species nests in mixed woods, and is most frequently found in the mountains of the state; photo by Rob Simpson.

The **least flycatcher** is declining by 5.8% per year in Virginia and is most commonly found above 2500 feet in the mountains. This species is the smallest flycatcher in Virginia; photo by Rob Simpson.

The **black and white warbler** (female pictured) is declining by 4.0% per year in the state. Another area sensitive species, this warbler usually requires large mature forest blocks for nesting; photo by Maslowski.

Bird Sampler



yellow-bellied flycatcher
cadian flycatcher
lder flycatcher
willow flycatcher
east flycatcher
great crested flycatcher
astern kingbird

Swallows and Swifts

Occur primarily in open areas, especially around farms, gardens, and open water. Feed almost entirely on insects caught on the wing. Nest in attics, barns, chimneys, under eaves, on bridges, in artificial nest boxes and occasionally in hollow trees.

purple martin
free swallow
northern rough-winged swallow
arn swallow
bank swallow
cliff swallow
chimney swift

Thrushes

Occur in mixed or deciduous moist, or bottomland, forests. Only one species occurs statewide, the other two are confined to higher elevations. They feed on ground dwelling insects, spiders, snails, and berries.

wood thrush
veery
Swainson's thrush

Vireos

Collectively use mature deciduous or mixed forests, often associated with water; also shrubby thickets, woodlots. Glean their food of insects and spiders from branches and foliage, occasionally taking berries. Also may catch insects on the wing by darting out from a perch. All build cup nests in shrubs or trees.

white-eyed vireo
red-eyed vireo

yellow-throated vireo
warbling vireo
solitary vireo

Warblers

Largest group of neotropical migrants. Found in almost all forest types, as well as brushy border habitats and shrubby fields, including regenerating clearcuts. Greatest diversity in deciduous forests, especially low-lying areas. Collectively utilize all vegetation levels from the ground to the upper canopy of the tallest trees to glean insects and spiders from branches, trunks, and leaves. Some also eat fruits and berries, and may catch insects in flight. They include

Louisiana waterthrush
Kentucky warbler
mourning warbler
hooded warbler
Canada warbler
yellow-breasted chat

Tanagers

Occur in mature deciduous and mixed woodlands, often lowland areas, wooded parks. They feed on insects, spiders, snails. Occasionally eat wild fruits or berries. Build nests in trees.

scarlet tanager
summer tanager

Grosbeaks and Buntings

Collectively inhabit second growth



The ruby-throated hummingbird (male pictured) is declining by 3.9% per year. This species responds well to wildflower plantings; photo by Rob Simpson.

ground nesters and cavity nesters although most build cup nests in trees or shrubs.

blue-winged warbler
golden-winged warbler
Northern parula
yellow warbler
chestnut-sided warbler
magnolia warbler
black-throated blue warbler
black-throated green warbler
blackburnian warbler
yellow-throated warbler
prairie warbler
cerulean warbler
black and white warbler
American redstart
prothonotary warbler
worm-eating warbler
Swainson's warbler
ovenbird

or mixed woods, shrubby forest borders, weedy pastures, hedgerows. Glean food from leaves, branches, and ground. Feed on insects, spiders, snails, seeds, and fruits. Build nests in low shrubs or trees.

rose-breasted grosbeak
blue grosbeak
indigo bunting
dickcissel

Orioles

Found in open deciduous woodlots, riparian groves, orchards, parks. Glean insects from trees and shrubs. Also eat fruits and berries. Build elongate or pendant-shaped sack nests suspended from tree branch.

Northern oriole
orchard oriole



management practices that may affect neotropical migratory birds. Probably the most controversial is the issue of *forest fragmentation*.

Forest fragmentation implies a situation where a forest is modified by clearing, cutting, road building or other method to a point where the size of the core area, or forest interior, is reduced. Much of Virginia's coastal plain forest was fragmented soon after the arrival of English settlers. As land was cleared for agriculture, large blocks of native forest were whittled down to numerous smaller blocks of remnant forest. Today, fragmentation typically takes the form of interstate highways bisecting forest stands, transmission line corridors traversing the countryside, or clearcutting small blocks out of a big stand. The end result is the same. The core area of the original forest has been reduced to two or more smaller areas, or its original shape has been changed to such a degree that the percentage of forest on the edge is greater than that in the interior. So, what you have now is not a forest of significant size, but a series of smaller

forest patches, or corridors. The consequence is that the bird populations in these new areas are likely to be radically different.

Although there are numerous bird species that live along the edges of forests, there are other species which require forests with lots of interior area, away from forest edges. The numbers of different kinds of neotropical migrants that might be found in a forest tend to be tied to the amount of forest interior. Many of these species are referred to as *area sensitive* species. That is, they are dependent on a forest size that is much greater than they actually need to find a nest site or to locate adequate food. In other words, a bird that requires 10 acres of forest as a defensible territory with sufficient food resources may not actually nest in a forest that is less than 100 acres, or even larger, in size.

One would not think that birds having already so little going for



Top: The **brown-headed cowbird** (female pictured) has become a threat to many neotropical migrants because of nest parasitism.

Above: The **black-billed cuckoo** is declining by 7.0% per year in Virginia.

Opposite page: The **golden-winged warbler** (female pictured) is experiencing the most precipitous decline of all neotropical migrants in Virginia, 8.3% per year (**top right**).

The **hooded warbler** (male feeding cowbird chicks) is showing declines in Virginia (**right**). Photos by Maslowski.



them could afford to be so choosy. The problem is, these species evolved in an environment where large forests originally were present. For whatever reason, predator avoidance, food availability, or any number of other possibilities, these species may depend on certain stringent resource requirements even now to survive.

And, in fact, there is evidence today that their requirement for large forests might not be such an extravagant behavior in view of still another problem: the brown-headed cowbird. The cowbird is a small black bird with a brown head and neck; its

mate is grayish-brown all over. It is smaller than a starling, grackle, or a red-winged blackbird, but can be seen in mixed flocks with any of these species. However, its color and size are not its unique features. The brown-headed cowbird builds no nest. It is a nest parasite on other birds, particularly neotropical migrants. As these smaller migratory songbirds build their nests, the cowbird patrols the area watching patiently. As birds lay their eggs over the course of two or more days, there are times when the adults may leave eggs unattended in the nest. It is at this moment that the cowbird fulfills its evolutionary bidding. It flies to the unattended nest and lays an egg of its own, often removing the host's egg. From there, it may move on to locate another host nest and continue to lay eggs in this fashion until it has laid its normal clutch of 6 eggs. A single cowbird may lay more than one egg per host nest, or multiple cowbirds may lay eggs in the same host nest.

Upon returning to the nest, the host parents have a decision to make. Is this their egg? If not, what do they do with it? Some birds recognize the fake right away, and take drastic steps to correct the situation. They may attempt to physically push it out of the nest, they may build another floor over the strange egg and start to lay a new clutch, or they may even abandon their nest. Other birds, however, may actually be stimulated by such a big egg, and with all the pride of new parents, they begin to incubate. Finally, other birds take it all in stride, lay another egg or two of their own, and start incubating as well.

Whatever the strategy, if they decide to incubate the foreign egg, the end result is the same. In a couple of weeks, they find themselves frantically trying to keep food going into this gargantuan offspring that in no time may be larger than the host parents. Of course, all of this is at the expense of the host's natural offspring. The end result? One more brown-headed cowbird chick that looks for another species' nest when it comes time to lay eggs; and one less brood of neotropical migratory birds. At





The ovenbird is one of the few ground-nesting neotropical migrants in Virginia. Occurring statewide, the ovenbird builds a unique "dutch oven" style nest; photo by Rob Simpson.

What's Happening in Virginia?

As the state regulatory wildlife resource agency, the Virginia Department of Game and Inland Fisheries (VDGIF) has been designated as the coordinator for the Neotropical Migratory Bird Conservation Program in Virginia. VDGIF also serves on the Management Working Group for the Northeast and the Southeast regions, as well as being a member of the steering committee for a national conference for resource managers. Toward that end, the Game Department's Nongame and Endangered Species Program has initiated or cooperated with the following programs toward implementation of the national objectives:

1) Additional Breeding Bird Survey (BBS) routes have been established in Virginia to better monitor the population

trends of many neotropical migrants. Many of these routes are being set up in association with efforts initiated by Shenandoah National Park, George Washington National Forest, and the Jefferson National Forest. Most of these routes are being placed in specific habitat types that have not been adequately covered by the randomized national survey. The data will be sent to the U.S. Fish and Wildlife Service's national database to provide additional information on national, regional, and state population trends.

2) Shorter BBS routes, or mini-routes, are also being established in specific areas according to standardized methodology handed down by the national monitoring committee. These routes will be designated for small isolat-

ed habitat types or off-road situations where the longer routes are not practical. The George Washington and Jefferson National Forests are taking a lead in establishing the first off-road monitoring routes.

3) A Rare Bird Monitoring Program was initiated in 1991 to collect observational data on specific species of concern in Virginia. This program is designed to provide site-specific locational data on as many species of concern as possible. An ancillary study in this program will seek to provide information on one or more specific neotropical migrants by attempting to locate and monitor nests.

4) VDGIF is coordinating with federal landowners to assist in the establishment of several Monitoring Avian Productivity Survivorship (MAPS) stations in Virginia. MAPS are a series of bird-banding stations being established across the country to gain demographic data on neotropical migrants. These stations are being set up under the direction of Dr. David DeSante in California, who is a leader in the field of assessing bird population characteristics. Shenandoah National Park has taken a lead in bringing the MAPS program to Virginia.

5) In a follow-up to 1991's four-state coastal migration study, VDGIF will be coordinating with the Virginia Division of Natural Heritage to evaluate habitat use by migrating songbirds in Northampton County. This effort will provide planning assistance at the county level toward the long-term conservation of migratory birds.

6) The Conservation and Research Center of the National Zoological Park has initiated a study of breeding bird ecology within several large tracts of mature deciduous forest in the Shenandoah National Park in order to better understand the impact of white-tailed deer populations on the ecology of understory birds. One of their goals is to understand how management policies for both plants and animals can enhance or inhibit the conservation of neotropical migratory birds.

least one neotropical migratory species, the Kirtland's warbler, was almost wiped out by cowbirds, and many more are suffering the effects of this nest parasite.

Fortunately, we know a little bit about how to control the damage done by brown-headed cowbirds. Unfortunately, large blocks of forest habitat, a commodity already in short supply, may be the answer. Brown-headed cowbirds tend to frequent open, or edge, habitats for locating host nests. They are a species that evolved in the grasslands of the West, so the forest is not a natural home for them. As a result, songbirds that nest along forest edges or open areas tend to be victimized more than species that nest in forest interiors. As the clearing of forest for agricultural land proceeded in the East, so, too, did the spread of cowbirds. Where once they were limited to a relatively small number of host species, their expansion eastward has more than doubled the number of bird species available to them as potential hosts. And the more that

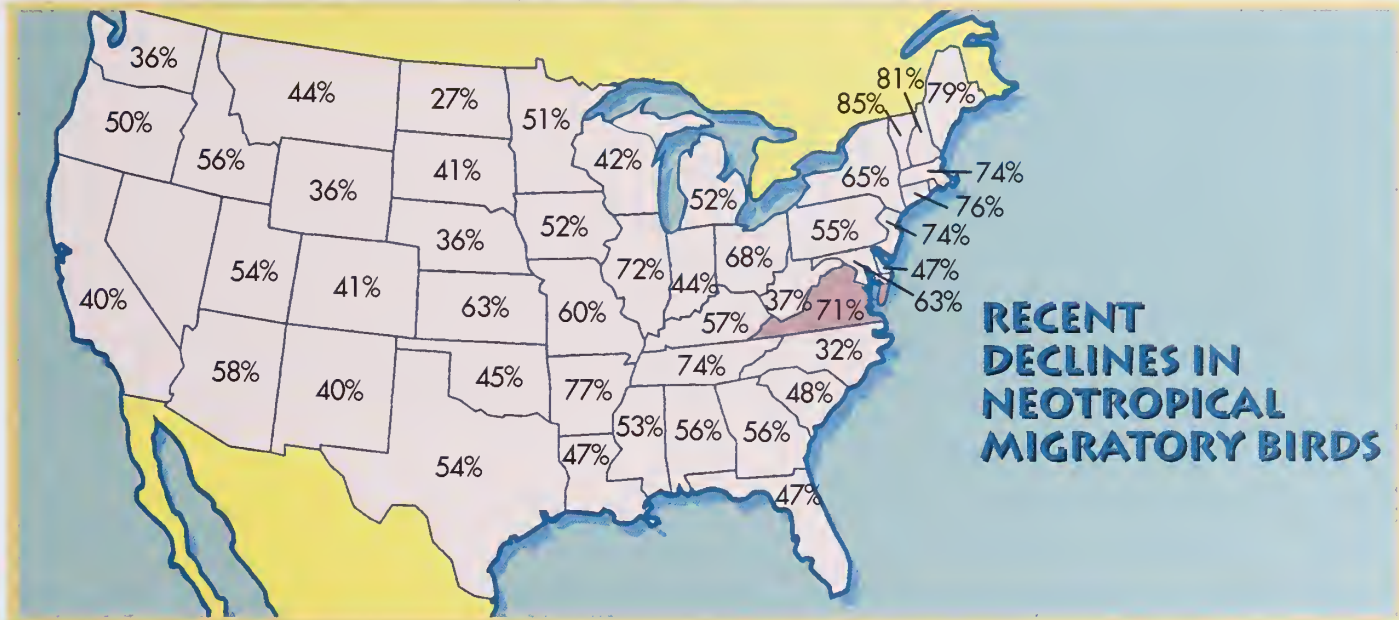
large forest areas are reduced in size to create more edge, the greater problems cowbirds will create. So, as specialized as neotropical migrants are, it appears there may be an advantage to the lifestyle of those area sensitive species nesting deep within large forest blocks.

The Solution

This marked decline in migratory birds over the last few years has sparked a flurry of research and popular articles. Until recently, this effort was largely uncoordinated. Then, in 1990, a quasi-governmental organization known as the National Fish and Wildlife Foundation initiated a program to address the problem of declining neotropical migratory birds. What began as a workshop in Georgia has become an international effort known as Partners in Flight, the Neotropical Migratory Bird Conservation Program. The U.S. Fish and Wildlife Service is the lead federal agency in this initiative. The U.S.D.A./Forest Service has also assumed a co-leadership role, as it

manages probably the largest quantity of breeding habitat for neotropical migrants through the National Forest System. Other major federal landowners have also come aboard, such as the National Park Service, the Bureau of Land Management and the Department of Defense, all taking an active role in implementing the objectives of Partners in Flight.

In addition to the federal agencies, there is a large non-governmental component made up of conservation organizations, academic institutions, private industry and interested individuals. And finally, the backbone of the program in many areas is the state government agencies themselves. To facilitate the implementation of the program, the country has been divided into four geographic regions: the Northeast, Southeast, West, and Midwest. As border states, Virginia serves with West Virginia and Maryland both in the Northeast and the Southeast regions. The program depends on cooperative efforts between federal, state, and private organizations to undertake projects



Above: Declines in neotropical migratory birds are widespread. The numbers on the map represent the percentages of neotropical migratory bird species with population declines in individual states between 1980 and 1989, based on data from the Breeding Bird Survey. Courtesy of Sam Droege, Office of Migratory Bird Management, U.S. Fish and Wildlife Service.

in research, monitoring, management, education, and international partnerships. These topical components are represented by working groups in each geographic region as well as national committees.

The concerted effort from all private and governmental levels to undertake this challenge represents the most comprehensive wildlife conservation venture ever undertaken in the Western Hemisphere. The truth in this statement lies in the fact that this issue does not just address a specialized group of birds. It speaks to the whole issue of conserving *biological diversity*, or how to manage the natural environment in such a way as to maintain the diversity of its natural components. There are over 20,000 species of animals in Virginia alone. Yet there are very few that would not benefit directly from a plan to conserve neotropical migrants.

It is uncertain at this time just what actions are needed to reverse the decline in migratory birds. Some general guidelines suggest, however, that changes in the way we manage our land may be necessary. Perhaps we need to manage our forested land in larger blocks. Perhaps there needs to be greater emphasis on the role of hardwoods in wildlife management. More attention to buffers along swamps, creeks, and marshes may be necessary. What we do know is that it will require a new era in wildlife management.

Historically, wildlife management has tended to incorporate a single species approach, both for game animals as well as endangered species. Yet, these actions have often been at the expense of other species and other interests. There are few species that will not benefit by managing for neotropical migrants, yet there is no doubt that specific management actions will still have to be undertaken for certain species, whether it is clearcutting for ruffed grouse, or prescribed burns for red-cockaded woodpeckers and Bachman's sparrows. What will need to be different in the future is an understanding of the impacts habitat management actions will have on all species. A holistic approach to wildlife management



Left: The white-eyed vireo, a forest edge nester, is showing a slight annual decline in Virginia. Below: The black-throated blue warbler (male pictured with young) is perhaps our best example of an area sensitive species. It requires large, moist mountain forests in which to nest, often more than 2,000 acres in size. Opposite page: Unlike many other warblers, the chestnut-sided warbler is increasing in Virginia at 5.9% per year, and occurs commonly in second-growth deciduous woods above 2500 feet; photos by Maslowski.



in the future will be the only truly responsible stewardship of our natural resources. The advantage to this strategy is that it offers us an opportunity to take a proactive approach to wildlife conservation, rather than perpetuating the reactive, crisis management approach that has been the case with endangered species in the past.

What is equally important, however, is that a wildlife conservation issue of this scale can still benefit, or be compromised, by the actions of a

single landowner. In that vein, it should be understood that managing for migratory birds is an issue of education and foresight. As this program grows, more information will become available, more resource managers will become educated, and more assistance to individual landowners will be forthcoming. All that is required of individuals is that they begin to look at resource management with an open mind, and a little better idea of what role we all play in the scheme of things.



Can I Help?



The common nighthawk is a neotropical migrant that nests statewide in open habitats, from urban rooftops to abandoned fields. This species is experiencing a steady decline of 1.4% per year; photo by Rob Simpson.

Under the *Partners in Flight* program, the Virginia Department of Game and Inland Fisheries is coordinating a statewide breeding bird survey (BBS) focusing on neotropical migrants. This project is designed to initiate a long-term monitoring effort and will be a cooperative venture with other state, federal, and nongovernmental participants. The Virginia Society of Ornithology (VSO), with its 24 local chapters existing across the Commonwealth, strongly supports this program and is assisting in its implementation. They are also taking a lead role in organizing the volunteers who will bring the data back from the field. Toward that end, there are numerous opportunities for bird enthusiasts of all skill levels to become involved.

WHO: We need both expert birders who can identify the songs and calls of Virginia's breeding birds as well as birders interested in monitoring nest sites.

WHAT: Volunteers will conduct either BBS routes (road, and off-road) or monitor nesting sites depending upon level of birding skills.

WHERE: Sites are located throughout Virginia with the first year focusing on public lands and areas of the state which have received poor coverage in the past.

WHEN: BBS routes will be run in early June. Nest monitoring will continue through the nesting season.

WHY: Concerns over declines in neotropical migratory birds have initiated an international effort to monitor and protect these globally threatened species.

For further details and information packets on specific projects, call: Nongame and Endangered Species Program, (804) 367-6913, or write:

Partners in Flight
Nongame Program
Virginia Department of Game and Inland Fisheries
P.O. Box 11104
Richmond, Virginia 23230-1104

For additional information on local opportunities with this program or for direct involvement through the Virginia Society of Ornithology, contact your local VSO or Audubon Chapter, or write: VSO c/o John Bazuin 7495 Little River Turnpike Suite 201 Annandale, VA 22003.

If you would like to contribute to the *Partners in Flight*, Neotropical Migratory Bird Conservation Program in Virginia, you may send donations to:

Treasurer of Virginia/Neotropical Bird Program
c/o Department of Game and Inland Fisheries
Nongame and Endangered Species Program
Box 11104
Richmond, VA 23230-1104.

Any money received under this program can be evenly matched by the National Fish and Wildlife Foundation to fund additional work in Virginia toward education, research, or management for neotropical migratory birds.

Please consider this opportunity to double your money toward saving Virginia's songbirds. ☐

Note: Trend information on species declines and increases used in this article was generated from Virginia 1980-89 BBS routes, courtesy of John Sauer, USFWS.

Dana Bradshaw is a nongame biologist with the Department of Game and Inland Fisheries.

Journal

Mount Rogers Naturalist Rally, May 15-16

The 18th annual Mount Rogers Naturalist Rally will be held Friday and Saturday, May 15-16, in Konnarock, VA. Sponsored by the United States Forest Service, the Mount Rogers Citizens Development Corporation, and the Naturalist Rally Committee, the Rally will feature guest speaker Dr. Russell Greenberg. Dr. Greenberg is currently a Research Fellow at the Smithsonian Institute in Washington, D.C. He has recently been appointed director of the Smithsonian Migratory Bird Center which was established by an act of the United States Congress in 1990.

Dr. Greenberg earned his Ph.D. at the University of California at Berkley and has been at the Smithsonian for 10 years. He is an expert in small migratory songbirds. The title of his talk is "Birds Over Troubled Forests: Natural History and Conservation of Migratory Songbirds."

Approximately 20 field trips will be led by recognized experts in the fields of botany, geology, ornithology, and other areas. There will also be hikes to the top of Mount Rogers, the highest mountain in Virginia. The Rally will be of special interest to birdwatchers, students of natural history, nature photographers, and geologists, as well as anyone who enjoys the study of wildlife and the outdoors. The registration fee is \$3.00, plus \$5.50 for the homecooked meal that accompanies the lecture on Friday, May 15th. For more information or to register, write Carrie Sparks, Naturalist Rally Registrar, 301 Look Avenue, Marion, VA 24354 or call her at 703/783-2125. □

Golf—It's For the Birds

Numerous conservation organizations play a continuous and significant role in the management of Virginia's wildlife resources. And, as they go about generating needed funds to apply toward conservation efforts, they become quite creative in

their approach. One such organization is the Virginia chapter of Ducks Unlimited, a long-time supporter of waterfowl management programs on a national scale.

On June 3, the Second Annual Virginia Ducks Unlimited Golf Classic will be held at River's Bend Golf Course in Chesterfield County. Last year's tournament raised, after expenses, over \$9,000 for the many conservation and waterfowl management programs of Virginia Ducks Unlimited.

If hitting a little white ball is your thing, you can do it and benefit wildlife at the same time. Just contact Steve Hall, Tournament Chairman, at: Tournament Sponsor—Hazel and Thomas (804) 344-3422. If you prefer, write to: Virginia Ducks Unlimited Golf Classic, P.O. Box 1069 Richmond, VA 23208 for an entry form and more information. □

A Special Angler's Yarn by George Flint

Early this past summer, I went trout fishing in the Jefferson National Forest. Some people might say, "So what?" Well, until this trip, and this summer, I couldn't get my wheelchair to the creek. If I did find a place to get down to the water, it would be uneven, too rocky or too shallow—a place where it would be impossible to catch anything except sticks and rocks. So, when I received an invitation to the dedication of a new accessible fishing trail in the Jefferson National Forest, I was all for it.

The Pines Campground is located next to Barbour's Creek, a stocked trout stream in Craig County. I got there early and asked Paul Paradzinski, who works with the Forest Service, if I could check it out. He said to go right ahead, and down at the creek I was really surprised to find a level trail with level places to sit and fish. I saw trout everywhere I looked and lots of places to get to them.

It was amazing that these people who were not in wheelchairs had done such a good job of making the

path and fishing area level and not too steep. I've had people invite me fishing before and assure me that I could get to the water. I have taken them up on their offers, only to arrive at the place and find no way whatsoever to get close enough to see even the color of the water. This place, on the other hand, was perfect.

After the dedication ceremony, it was "Katy, bar the door." In no time we were rolling down the trail looking for the perfect spot to catch that "big one." It wasn't long before fat rainbow trout were dancing at the end of quite a few lines.

I would like to thank the U. S. Forest Service, Virginia Department of Game and Inland Fisheries, Trout Unlimited, the Center for Independence for the Disabled, Boy Scouts, VPI & SU, Hooked on Fishing International, the Hunter's Den, and the Rainbow Connection for making places like these available to me and others with disabilities. I'm also grateful to the Roanoke Area Spinal Cord Injury Support Group for their support of recreational activities. This is the second year for our outings and I've had a lot of fun picnicking, fishing, and sail-planing with them. I knew there were other quads and paras out there who shared my love of the outdoors. This group helped me to find them.

Editor's Note: The Virginia Department of Game and Inland Fisheries (VDGIF) has developed nine handicapped access sites for anglers on lakes around the state, and is planning to develop nine more within five years. Contact the VDGIF at P.O. Box 11104, Richmond, VA 23230-1104, (804/367-1000) for more information and maps to the sites.

The George Washington National Forest (GWNF) has developed handicapped access to four of their lakes and is welcoming suggestions from anglers on other possible sites. For more information, contact the GWNF, Harrison Plaza, Corner of Elizabeth and Main Streets, Harrisonburg, VA 22801, (703) 433-2491.

The Jefferson National Forest (JNF) has made handicapped access available at four sites in the Forest, and is working toward developing more. For information on these areas, contact the JNF at P.O. Box 241, 210 Franklin Road, Roanoke, VA 24001 (703) 982-6270.

George also wanted to let our readers know that they can get a catalog specializing in rods and reels for people with disabilities by writing to: J. L. Pachner Ltd., 13 Via Di Nola, Laguna Niguel, CA 92677. □

Make a Wish

Did you ever wish you could lengthen the hunting season, change the creel limits, or open turkey season a week earlier? Well, believe it or not, you have a voice that counts in these matters. Your board of directors of the Virginia Department of Game and Inland Fisheries was handpicked by the governor to listen to *you* when it comes to hunting and fishing and other wildlife regulation matters. And, because the board of directors makes all the regulations of the Department, you can bet that your voice is heard.

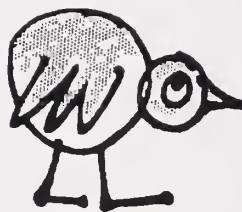
Read more about how this special group of citizens committed to taking care of the fish and wildlife of the Commonwealth *and* the sportsman operates in next month's *Virginia Wildlife*. □

Go Fishing!

On Saturday, June 6 and Sunday, June 7, you can fish anywhere in the state except trout-designated waters without a license! The Department of Game and Inland Fisheries is supporting these complimentary free fishing days to encourage Virginians to try fishing—with no strings attached. But, if the truth be known, we *are* baiting you—we're hoping that sometime during those two days you'll get hooked on the sport.

Although you won't need to purchase a fishing license, you will have to follow all other fishing regulations on those two days, including creel limits, so be sure to pick up a copy of the latest fishing digest of regulations from your local sporting goods store. Have fun ! □

HAS EVERYBODY HEARD ABOUT THE BIRD?



HELP SAVE THE PIPING PLOVER.

This is the time of year that the rare, federally endangered piping plover makes a last ditch effort to survive by nesting on our beaches. They can't take anybody disturbing their nests, so please obey the wildlife protection signs put up on the Eastern Shore and at Grandview Beach in Hampton. Keep your pets leashed and your beach buggies away from their nesting areas. Support the research of the Virginia Department of Game and Inland Fisheries on this small bird by contributing to Virginia's Nongame and Endangered Species Fund. Send in the coupon in the back of this magazine with your contribution—today—to VDGIF, Attn: Endangered Species Program-VW, P.O. Box 11104, Richmond, VA 23230-1104.



Winter Comfort
By
Bob Henley

Winter Comfort

by Bob Henley
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Available now from
Virginia Wildlife.

We are proud to offer wildlife artist Bob Henley's limited edition print of two red foxes in snow to our *Virginia Wildlife* subscribers. Bob Henley's breathtaking work has been featured in the February and July 91 issues of *Virginia Wildlife*, and for weeks after those magazines appeared, people called us inquiring about

Bob Henley prints for sale. We realized that our subscribers weren't content to have a Bob Henley work in their magazines, they wanted one for their walls! And, lo and behold! Bob has allowed us to make a special offer to our subscribers. First, you can have your very own 13"x19 1/2" *Winter Comfort* print for \$35 when you buy two one-year subscriptions

to *Virginia Wildlife*. That's a savings of \$10 off the regular price of *Winter Comfort*.

Of course, if you've already given everyone you know (including yourself) a subscription to *Virginia Wildlife*, you can still purchase *Winter Comfort* for \$45. Any way you look at it, we hope you're as happy as we are about the

opportunity to own a Bob Henley limited edition print for under \$50. Orders yours today!

Use the gray card in this magazine to order your prints and subscriptions, or send in your list of gift subscriptions and the number of prints ordered with your check made out to: *Treasurer of Virginia*, to: *Virginia Wildlife*, P.O. Box 11104, Richmond, VA 23230-1104.

Freshwater Game Fish Poster

The Virginia Department of Game and Inland Fisheries has produced a full-color 21" X 36" poster of 23 freshwater game fish in Virginia. This identification poster of fish includes largemouth bass, trout, crappie, catfish, perch and pickerel, and can be purchased by sending a check for \$8 to:

Fish Poster, Virginia Department of Game and Inland Fisheries, P.O. Box 11104, Richmond, VA 23230-1104. Please make check payable to: *Treasurer of Virginia*. ☐



Photo TipS

By Lynda Richardson

With a flash of red, the male cardinal returned to its nest. Perched on a limb near the stick-built cradle, tiny dark heads popped up, bobbing and swaying, squeaking for a chance to dine on whatever tasty morsel their father had captured. This time a lime-green caterpillar awaited the fussiest open beak. The male watched the anxious heads and then stuffed the bug into the closest big mouth.

Photographing nesting birds can be very fulfilling. But, photographers have to be very careful. Your presence alone is enough to alert predators to a nest. If you're not careful, one day you might find that your subjects have gone, kidnapped during the night by the neighbor's cat.

When I find a nesting songbird, I back away and study the situation. First, I want to know if the female is brooding eggs or chicks. I almost never photograph a bird sitting on eggs. This is a critical period when the parents are most susceptible to being disturbed and more likely to abandon their nest. If adults are feeding chicks, you have a better chance of getting good photographs. Maternal instinct is strong and even if the parents are disturbed a little, they will usually return to the nest to feed their hungry, chirping brood.

Once you've found a nest with chicks, you'll need to decide whether to photograph it from a blind or with a remotely fired camera. Either way, you must first start by placing your blind or camera approximately 20 to 30 feet away from the nest and leaving it. Then, from a safe distance, watch with binoculars to see if the adult birds return. Songbirds feed their young every 15-25 minutes, so

if they do not return within that time, move your equipment farther away from the nest. Once the adults return to the nest, wait for a few feedings and then move the equipment closer. This can sometimes take as long as one or two days, but it is the best way to acclimate wary parents to strange objects near their nest.

You are now probably wondering how you can leave valuable equipment out in the elements with a chance of being stolen. I just fake it. A

their nest sites specifically with these protective branches in mind. The very branches you might cut away are usually the ones that provide protection from predators and the heat of the sun. When I "remove" branches from a shot, I use twist ties or string. I select only branches that obscure my view of nest activity, concentrating on the side branches, not those which shield from the top. And each time I leave the site, I return the branches to their proper positions by removing the twist ties or string.

Your next concern should be the lighting. Can you shoot with available light or are strobes/ flashes needed? Study the light on your nest site at different times of the day and choose to shoot at the best times. (Usually, this is early morning or late evening.) If the light never seems right, why not give your flash equipment a try? Placing one or two flashes at 45 degree angles to the nest can give you a good start for artificial lighting. Depending if you're facing east or west, the sun might provide a nice backlight, haloing your subjects in a golden glow. Other-

wise, an artificial backlight can be placed behind the nest to mimic sunlight. I have spoken with many well-known photographers on their views about "flashing" wildlife subjects. They all seem to agree that animals are not disturbed by the quick, cool, flashes and that they appear to perceive it as lightning. But, if you try flash and your subjects appear disturbed, just don't use it.

Time spent watching and photographing parent birds raise their families can be an inspirational experience. But always remember how fragile their lives can be. Treat your subjects with respect, and common sense, and they will continue to provide photographic opportunities for future generations. □



A female Northern cardinal sits on her two-day-old brood in a holly tree. This photograph had to be lit entirely by strobes; one behind and high for the backlight and one on the right of the nest at a 45 degree angle; photo by Lynda Richardson.

"faux" camera can be built out of a block of wood (camera body) and a frozen concentrated juice can (lens). Glued together and painted black, this instant camera looks real from a distance, especially with the crowning touch; a cheap glass filter taped to the front. You could even make a fake tripod to set it on. Fake flashes and blinds can easily be built as well. When you're ready to shoot, simply exchange a "real" camera, flash or blind for the fake one and you're ready to go.

Once the parents have acclimated to the camera or blind, you can start taking pictures. Unfortunately, many photographers choose this time to begin clipping branches away from the nest. *Never* do this! Birds choose

By Spike Knuth

Hatchery Headaches

Raising trout and running a trout hatchery or rearing station can be a complex operation. A constant supply of fresh water with consistent temperatures is a necessity. Trout need constant care and attention from egg to adult.

From August through November each year, eggs and milt are stripped from brood fish maintained at each of the hatcheries. Eggs are treated for disease, as are the fry which are then nurtured to the fingerling stage. Hatchery crews must be on the constant lookout for disease, and trout have to be treated to protect against it.

They have to be fed, graded and moved to be kept with others of like size. At certain sizes they are moved to rearing stations to grow. Each hatchery and rearing station has their area of responsibility when it comes to stocking, and the hatcheries have to supply the rearing stations with their supply.

Once the trout reach stocking—or legal catch—size, they have to be loaded and transported, often many miles, for stocking. From February to June, crews are out stocking Virginia streams, ponds and lakes, and again from late-October to mid-December.

Now, hatchery ponds must be cleaned. In some cases their bottoms must be scrubbed! Water control structures, plumbing, equipment, machinery and vehicles have to be cleaned, repaired, maintained and/or purchased. Food for trout has to be purchased so that the required formulas and amounts for each specific stage of growth is available at the right time.

Then there's the natural interferences—those Excedrin headaches

number so-and-so! Variables in weather can't always be anticipated. Floods have devastated the Montebello Rearing Station a number of times. Drought can cause low-flow situations that affect hatchery water supplies.

Sometimes it is other wildlife that can give the hatchery manager headaches. Muskrats and beavers will burrow into dirt banks, breaking down or collapsing them, or undermining walls and water control structures and causing siltation problems. It's true that they can't help it. They think they've found just the perfect spot to live, complete with a ready supply of water. But trout hatcheries and muskrats don't always mix. At the Coursey Springs Rearing Station in 1991, licensed trappers were hired to control them and 129 muskrats, eight beavers and six minks were removed.

One unusual and expensive problem is the loss of hatchery trout to birds such as kingfishers, ospreys, eagles and herons. At Coursey Springs, kingfishers take a few trout daily throughout the year. Eagles and ospreys hang around the hatchery for a few weeks every spring and fall during migration. As many as a dozen or more ospreys have visited Coursey Springs in spring, fattening up on what is to them an unusually rich series of shallow ponds just teeming with easy to-catch trout—a sort of osprey Valhalla!

However, according to Hatchery Superintendent Warren Eubanks, the most destructive birds are the great blue herons in summer. "They'll swoop in at night to feed on the fingerlings," Eubanks said.

During the summer, brown and

brook trout are in their fingerling stages—the new crop for next spring's stocking. But, it's also the time of the year that the herons have hungry young in the nest. The herons, of course, are aware only of the fact that they have stumbled into a land flowing with fresh water and a never-ending supply of trout. Kind of like our ancestors when they came to the New World!

Eubanks said that the birds have been observed taking 30 to 40 trout fingerlings "at a sitting." An estimated 20,000 trout are lost to the herons each summer. Considering that it costs about \$3 a pound to raise trout, that's pretty expensive heron food!

"They'll drop right in on the little fish," said Eubanks, "but they'll also go after the adult trout by landing on the dikes, then creeping down the bank to stalk in typical heron fashion."

Of course, all these birds are federally protected, so none can be harmed. It takes a little innovative thinking to outwit them. The herons are afraid of people, but the cost of hiring night watchmen is prohibitive. Scare devices don't work for long, since the herons become accustomed to them.

Eubanks and his crew are trying to counteract the pilfering herons by stringing two or three lengths of 20 lb. monofilament fishing line the length of the ponds.

"The herons apparently have amazing eyesight," Eubanks related. "When they swoop in now to feed on the fingerlings, they flare off when they see the fishing line."

For now, it's working. How long this will deter the cagey herons remains to be seen. If it doesn't work, it will be just another one of many headaches hatchery personnel will have to figure out a way to cure. □

Recipes

By Joan Cone

A Fish Chowder Dinner

What could be better for a spring dinner than a steaming bowl of chowder? Chowders are nourishing, delicious and the foundation for some memorable meals. Serve your chowder with a salad, hot bread and a dessert.

Nearly any firm fish can be used for chowder. Large bass of all species, including hybrids, catfish, walleye and northern pike make first-rate chowder.

Of course, there are many varieties of chowder. Some are complicated. This fish chowder is easy and delectable.

MENU

Blue Cheese Spread
Fisherman's Chowder
Broccoli Salad
Batter Bread
Lemon Chiffon Pie

Blue Cheese Spread

1 package (8 ounces) cream cheese
4 ounces blue cheese
Worcestershire sauce to taste
Dash onion powder to taste

Soften cream cheese and blue cheese together and place in a processor or blender. Add Worcestershire sauce and seasoning and mix thoroughly until smooth. Chill for several hours and serve with assorted crackers.

Fisherman's Chowder

1 pound skinned fish fillets, cut in 1-inch chunks
1/2 cup chopped onion
2 tablespoons margarine or vegetable oil

2 cans (10 3/4 ounces each) cream of potato soup
2 cups milk
1 can (1 pound) tomato wedges, undrained
1 package (10 ounces) frozen mixed vegetables, thawed
1 can (8 ounces) whole kernel corn, drained
1/2 teaspoon salt
1/8 teaspoon pepper
1 bay leaf

In a large saucepan, cook onion in margarine until tender but not brown. Add soup, milk, tomato wedges, vegetables, corn, salt, pepper and bay leaf. Heat, stirring occasionally, until simmering. Add fish; simmer approximately 10 minutes or until fish flakes easily when tested with a fork. Makes 6 servings.

Broccoli Salad

1 bunch broccoli
8 slices fried bacon, crumbled
1/2 cup raisins
1/2 cup slivered, toasted almonds

Dressing:

1 cup lite mayonnaise
1/3 cup sugar
2 tablespoons vinegar

Cut broccoli into small flowerets. Add crumbled bacon, raisins and almonds; mix together. Combine dressing ingredients, mixing well. Add dressing to broccoli mixture and refrigerate for at least 4 hours. Serves 6 to 8.

Batter Bread

2 eggs
1 cup buttermilk
1-1/2 cups corn meal

1 teaspoon baking powder
1 teaspoon salt
2 cups boiling water

Preheat oven to 450 degrees. Beat eggs, add buttermilk and to this add the cornmeal, baking powder and salt; mix well. Add boiling water to mixture and pour batter into a well-greased 7-inch round Pyrex dish. Bake 20 to 25 minutes. Serve with margarine or butter. Makes 6 servings.

Lemon Chiffon Pie

1 baked pie shell for a deep 9-inch pie plate
1 tablespoon unflavored gelatin
1/4 cup water
1/2 cup sugar
1/2 cup fresh lemon juice
1/2 teaspoon salt
4 beaten egg yolks, reserve whites
1 teaspoon grated lemon rind
4 egg whites
1/2 cup sugar

Soak gelatin in 1/4 cup water. Meanwhile, combine, stir and cook in a double boiler until the consistency of custard 1/2 cup sugar, lemon juice, salt and 4 beaten egg yolks. Stir in the dissolved gelatin and lemon rind. Cool these ingredients. Whip until stiff the 4 egg whites and then beat in very slowly 1/2 cup sugar. When the custard begins to thicken, beat it with a wire whisk until it is fluffy. Fold in the beaten egg whites. Fill the pie shell and chill thoroughly before serving. Makes 8 servings. □



by William Antozzi, Boating Safety Officer

We Fuel You Not

Too many boaters run out of gasoline. That doesn't seem to happen very much to those who use diesel fuel. The reason for the difference is probably that most large boats use diesel whereas the smaller ones use gasoline. Plus, many operators of small boats use their boats as a platform for their sports rather than a vessel for cruising.

There are not many good excuses for running dry. When boaters set out on trips, they should plan to use one-third of the fuel on the way out and save about two-thirds for the return trips. Return trips may take longer because of bad weather, strong winds, currents and tides, using longer return routes, taking on more weight, or other unforeseen problems. Some small boats have only one portable gas tank. That is a mistake because it is easy to use too much and not be aware of it. At least two tanks is better because it provides a built-in check on fuel usage. If one tank is empty or near empty, then the amount of fuel used is known. Planning the remainder of trips from that point starts from a known quantity of fuel, and usage must be estimated accurately.

Some rules of thumb apply for fuel use which are imprecise, but provide good ideas of fuel consumption. Inboard gasoline engines use about 9 gallons per hour per 100 horsepower. For example: 250 horsepower engines run at full power may use about 22 gallons per hour per engine. Some boat engines do better

than others. My twin 250 horsepower engines are each rated by the manufacturer at 12 gallons per hour per engine at cruising speed. Outboard engines generally use about 10 gallons per hour per 100 horsepower. Diesel engines use about 7 gallons per hour per 100 horsepower.

Boat operators should know their boat fuel consumption at various revolutions per minute. It can be determined by using boat tachometers and fuel-flow meters to calibrate fuel use at various engine revolutions per minute which can be translated in boat speeds.

Two things can adversely affect fuel use. One is marine growths on the hulls and the other is added weight. If a significant number of passengers and heavy objects are added, recomputation of fuel use is advisable.

Outboard boats with built-in tanks often have portable tanks aboard. It is easy to disconnect regular tank hoses at the engines and plug in the portable tanks. The extra fuel provides a nice secure feeling but the containers should be secured out in the open where leakage will not cause problems.

When boats run out of gasoline, it is difficult to help because most boats do not carry extra fuel in portable cans which can be transferred to the disabled vessels. Most boats which

exhaust all fuel must be towed to the nearest fuel dock.

One of the big dangers are gasoline leaks. That is why it is so important to sniff before starting engines. Some boaters think that running the bilge blowers for awhile, then starting the engines is safe procedure. It is unsafe because leaks could go undetected. Getting noses down into gasoline tank and engine hatches is the way to go. Not much gasoline is usually lost because of leaks, but the resulting explosions and fire can be disastrous. □



photo by Tom Evans

We're fighting for their lives

Many of Virginia's wildlife are in danger. Suffering from habitat loss and the dangers of pollution which threaten their survival, many species in the state are struggling to survive.

The Department of Game and Inland Fisheries is responsible for the protection and conservation of all wildlife in Virginia, but we receive no state tax dollars, and we need your help to do our job. Help us fund critical research and management programs for the state's nongame and endangered species by contributing to our Nongame Wildlife Fund, which is supported solely by voluntary contributions made through our state tax-checkoff program and direct giving.

Please use the gray card in back of this magazine to make a donation, or simply send your tax-deductible check (made payable to the Treasurer of Virginia), to: Virginia Nongame Wildlife Fund-VW, Virginia Department of Game and Inland Fisheries, P.O. Box 11104, Richmond, VA 23230-1104.



Screech owl, photo by Bill Lea.

Resource Guide Available on Virginia's Endangered Species

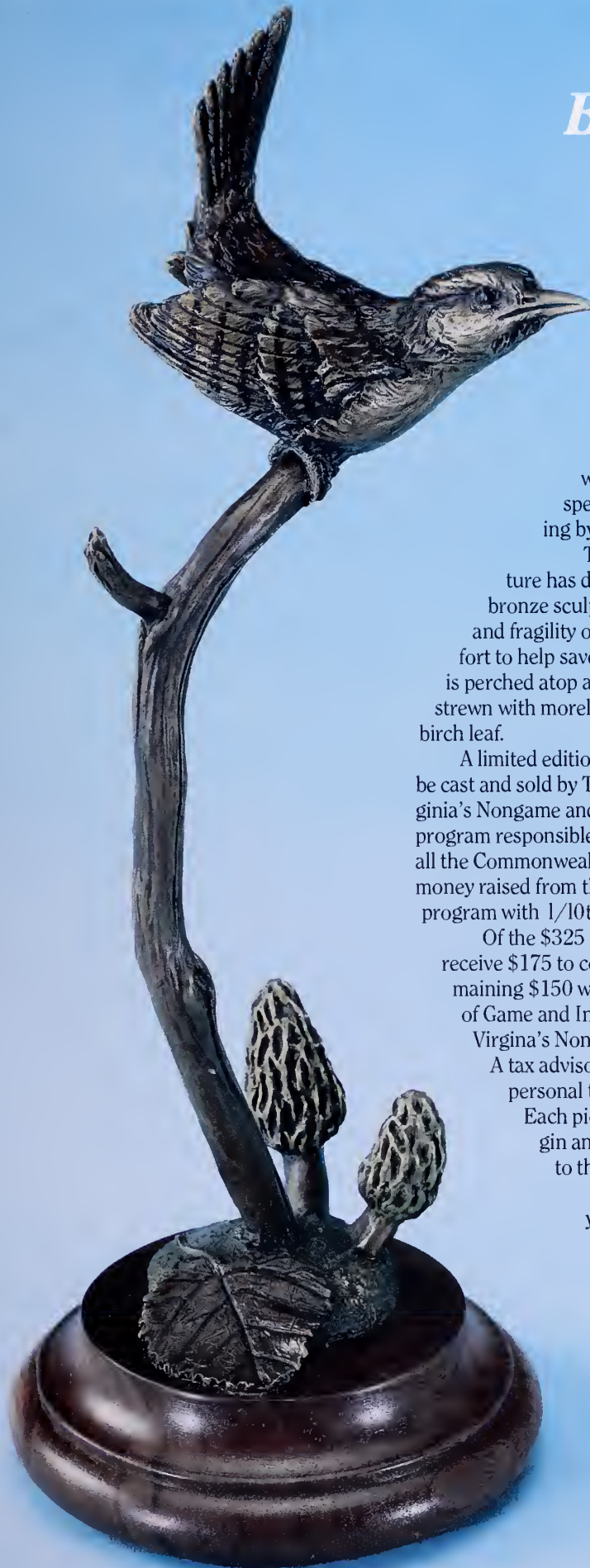
Oder the only comprehensive resource guide on Virginia's Endangered Species for \$32.95 (softcover) or \$59.95 (hardcover). This 675-page guide identifies and describes more than 250 rare and endangered plants and animals in Virginia. Produced by the Virginia Department of Game and Inland Fisheries and other state natural resource agencies, this book documents the latest scientific information on Virginia's endangered species, information which is available in no other publication. Send your

check plus 4.5 percent sales tax and \$3.00 shipping and handling charges to: McDonald and Woodward Publishing Company, P.O. Box 10308, Blacksburg, VA 24062-0308. Phone: (703) 951-9465.

To order a **Virginia's Endangered Species poster** of the illustration featured left, please write a check for \$8 made payable to: Treasurer of Virginia, and send to: VA Endangered Species Poster Offer, Attn: Diane Davis, VDGIF, P.O. Box 11104, Richmond, VA 23230-1104.



Buy one for a Song



The cheerful *chip, chip, chip, de-da-a, te-dee* of the Be-

wick's wren is seldom heard in the mountains of Virginia anymore. Declared endangered in Virginia, the Bewick's wren represents just one of many species of wildlife whose survival is hanging by a thread in our state today.

Thus, David Turner of Turner Sculpture has designed this delicate 12-inch high bronze sculpture to draw attention to the beauty and fragility of the Commonwealth's wildlife in an effort to help save them. The enchanting Bewick's wren is perched atop a limb that pokes up from a forest floor strewn with morels and single rare Virginia round-leaf birch leaf.

A limited edition of 200 of these bronze sculptures will be cast and sold by Turner Sculpture, solely to benefit Virginia's Nongame and Endangered Species Program, the program responsible for the management and protection of all the Commonwealth's rare and endangered wildlife. The money raised from the sale of this sculpture will provide the program with 1/10th of its present operating budget.

Of the \$325 purchase price, Turner Sculpture will receive \$175 to cover their production costs. The remaining \$150 will be sent to the Virginia Department of Game and Inland Fisheries as your contribution to Virginia's Nongame and Endangered Species Fund.

A tax advisor should be consulted regarding the personal tax deductibility of this contribution.

Each piece sold will include a certificate of origin and a letter confirming your contribution to the future of Virginia's wildlife.

Order your sculpture by sending your \$325 check made out to Turner Sculpture to: Turner Sculpture, Box 128, Onley, VA 23418. For credit card orders, call : (804) 787-2818.



